

Why is the U.S. Army Corps of Engineers (USACE) Monitoring?

- Remediation of soil and debris can release dust with contaminants into the air.
- Engineering controls are used during excavation and waste handling to reduce airborne contaminants.
- Continuous air monitoring for site contaminants ensures the effectiveness of safety controls.
- These efforts protect both on-site workers and the surrounding community.

USACE Approach to On-Site Air Monitoring: What and How?

- **Personal Breathing Zone:** Workers wear individual monitors that are analyzed daily for radiological particulates and other occupational hazards.
- **Work Area:** Each active work area is supported with a combination of radiological particulates and total suspended particulates (TSP) dust monitoring using portable equipment.
- **Perimeter:** Stationary equipment that operates 24/7 is used to monitor radiological particulates and TSP along the site boundaries to ensure engineering controls are protective of the surrounding community at all times.
- **Monitoring Scope:** Radiological, TSP and meteorological data are collected to interpret conditions and verify engineering controls in real time during remedial activities. All radiological air samples are analyzed for gross alpha and gross beta radioactivity at an on-site screening laboratory. Samples are then composited and analyzed at an off-site accredited laboratory to determine radionuclide concentrations including radium (Ra-226), thorium (Th-230, Th-232), and total uranium.

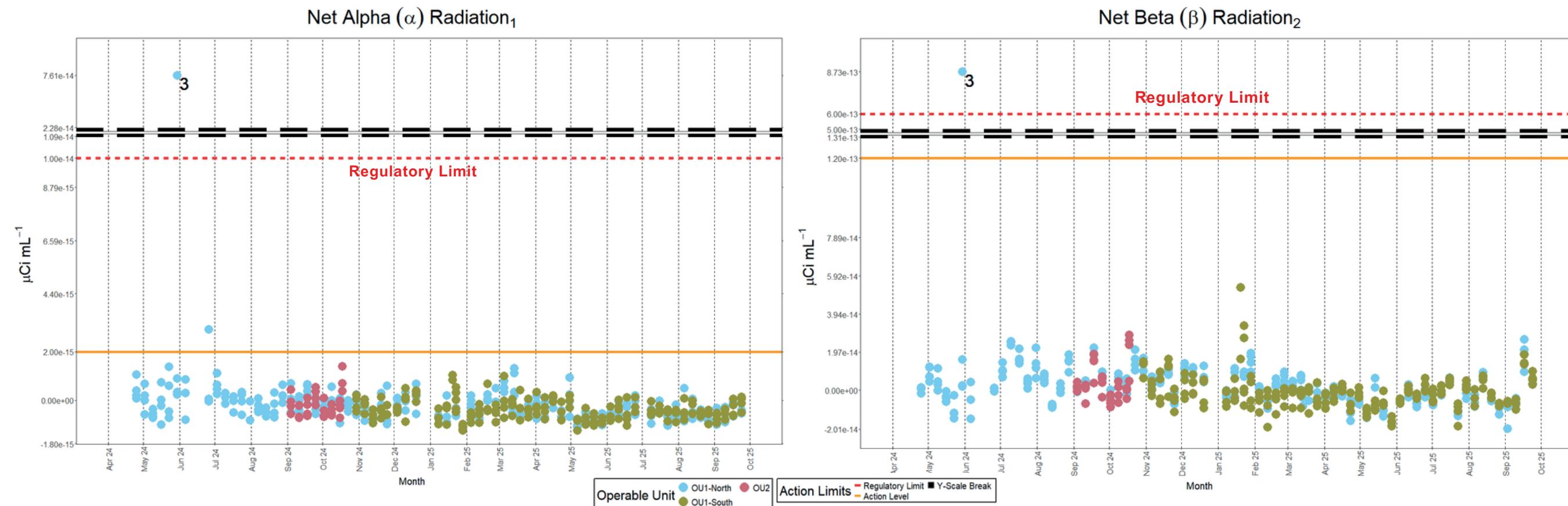


A dedicated USACE team (industrial hygienists, health physicists, chemists, safety and health officers, and engineers) coordinates closely with on-site workers to maintain safety during FUSRAP material cleanup activities.

We implement engineering control best management practices to prevent the spread of contamination off-site. Key measures include:

- Decontamination of equipment and materials moved between site zones.
- Regular cleaning of trailers and offices to ensure contamination-free environments.
- Dust control using water trucks to minimize the potential spread of airborne contamination.
- Water generated during the remedial excavation operation is considered potentially contaminated, and is collected, stored, sampled, and treated, if necessary, prior to discharge.
- Tarping of on-site and off-site haul trucks to contain dust and debris during transport.
- Lining, covering, and securing of soil/debris stockpiles overnight and during weekends and holidays.

Monthly Concentration (Filters Changed Weekly)



1- Regulatory Limit 1.0E-14 $\mu\text{Ci}/\text{mL}$; Site Action Level* 2.0E-15 $\mu\text{Ci}/\text{mL}$; 10 CFR 20, Appendix B, Values for Th-230, Class W used as most conservative surrogate for alpha activity using a weighted air effluent concentration (WAEC) approach. Derived Air Concentration, occupational value for inhalation, assumes exposure limited to 2000 hours/year. Most conservative inhalation properties assumed of radionuclide, controls dose to the public, annual average.

2- Regulatory Limit 6E-13 $\mu\text{Ci}/\text{mL}$; Site Action Level* 1.2E-13 $\mu\text{Ci}/\text{mL}$; 10 CFR 20, Appendix B, Value for Pb-210, Class D because it is the long-lived beta-emitting radionuclide with the most restrictive occupational and effluent limits. Derived Air Concentration, occupational value for inhalation, assumes exposure limited to 2000 hours/year. Most conservative inhalation properties assumed of radionuclide, controls dose to the public, annual average.

3- High value in OU-1N resulting from short run time due to power failure on air sampler. No site activity occurred on this date. Monthly composite samples were sent to an off-site laboratory for isotopic analysis: isotopic results for Ra-226, Th-230, Th-232, and Total U were all below regulatory limits.

*- Action level is 20% of the Regulatory Limit (As Low As Reasonably Achievable [ALARA] requirement) and require on-site activities to be paused in order to evaluate controls, activities, and the need to implement corrective measures.